



Overview of JAXA's Newest Earth Observation Satellite "SHIZUKU" ~ Application & Future plan ~

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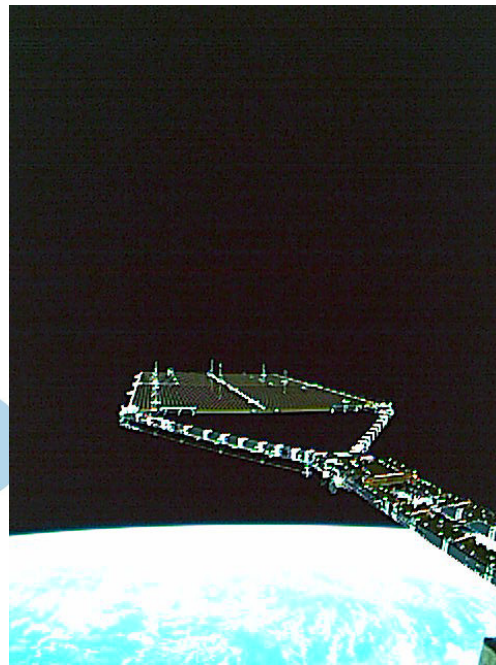


JAXA's newest earth observation satellite "SHIZUKU"

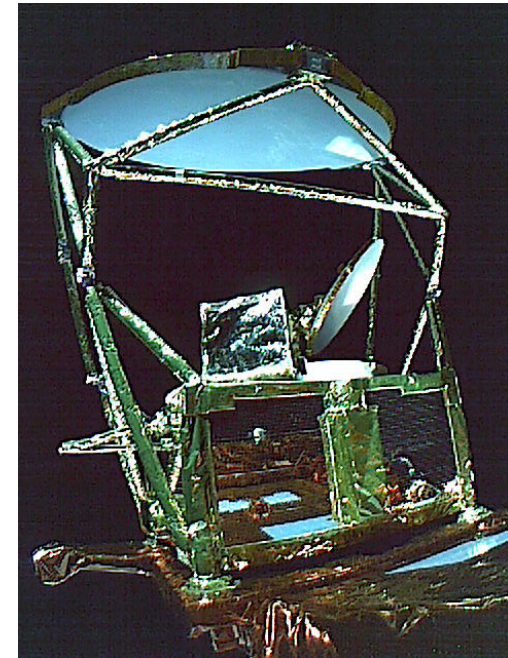
- May 17th, 2012, JAXA launched "SHIZUKU" by H-IIA launch vehicle
- Critical operational phase after the launch completed successfully
 - Solar array paddle deployment
 - Main refractor of mission sensor deployment



SHIZUKU launch



Solar paddles deployment



Main Refractor deployment



Overview of GCOM mission

Objectives of GCOM

■ Climate change observation:

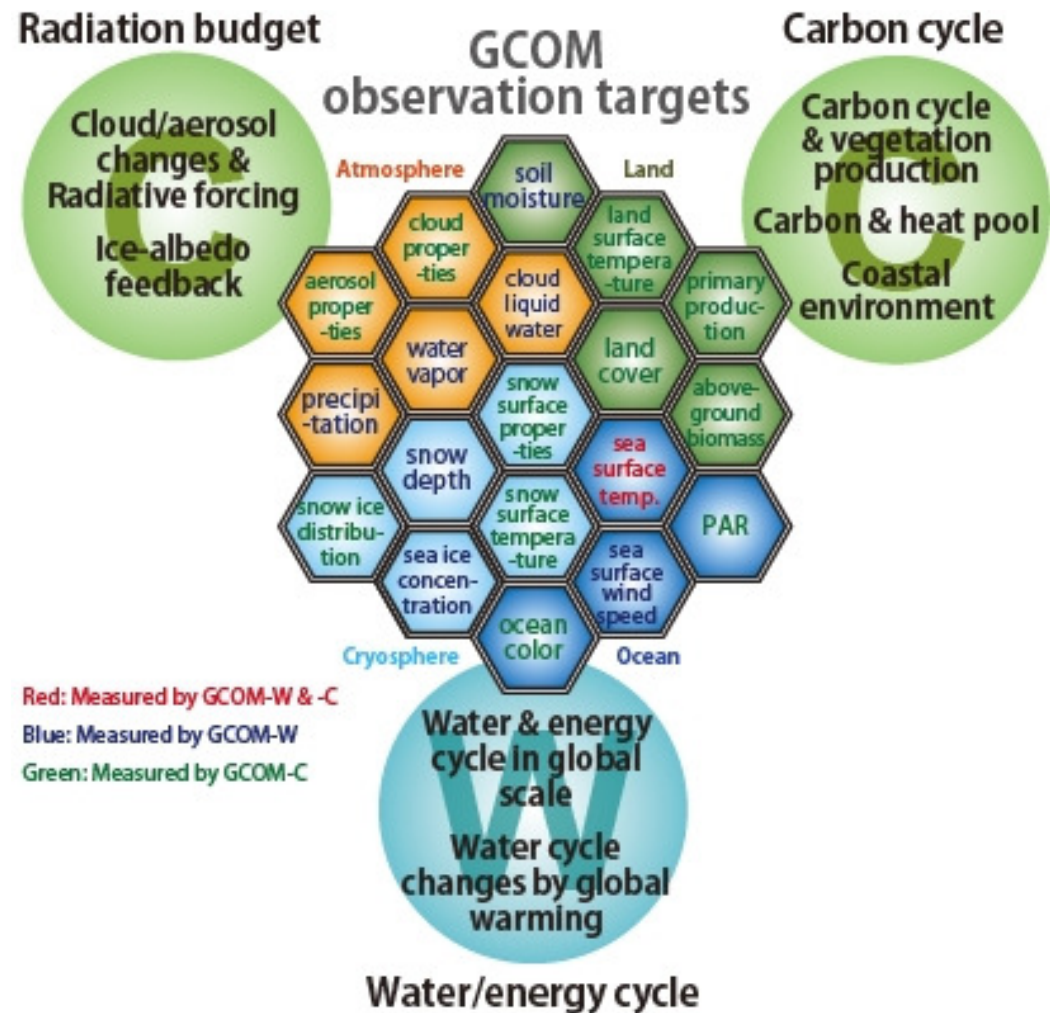
- Various targets: Atmosphere, land, Cryosphere, Ocean
- Understand: Radiation budget, Carbon cycle, Water and energy cycle

GCOM-W (Water)

- ✓ Observe water cycle mechanism
 - ✓ Sea surface temperature
 - ✓ Sea-ice concentration, etc

GCOM-C (Climate)

- ✗ Observe climate change factors
 - ✗ Cloud
 - ✗ Aerosol
 - ✗ Land cover, etc





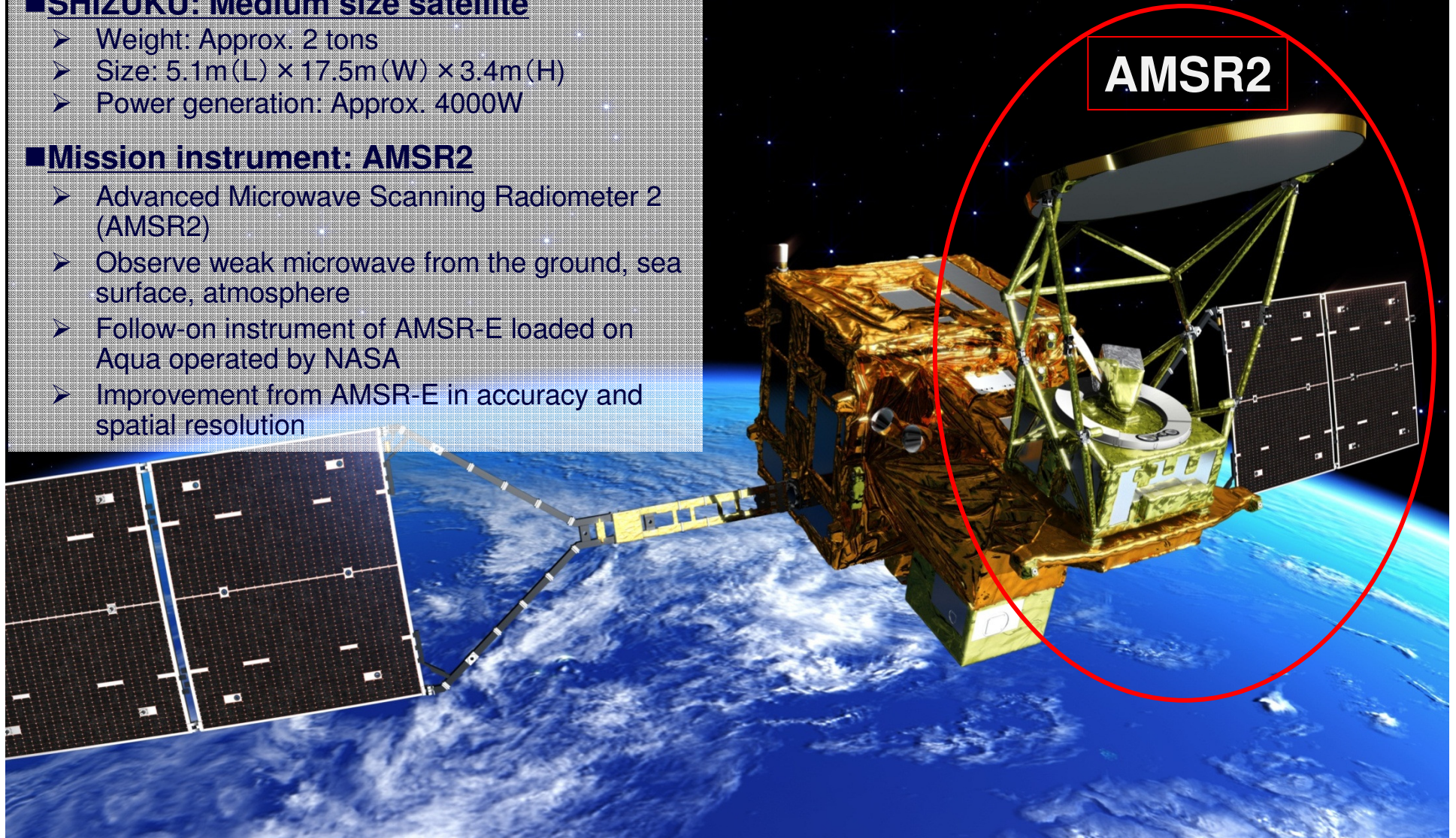
Overview of “SHIZUKU”

■ SHIZUKU: Medium size satellite

- Weight: Approx. 2 tons
- Size: 5.1m(L) × 17.5m(W) × 3.4m(H)
- Power generation: Approx. 4000W

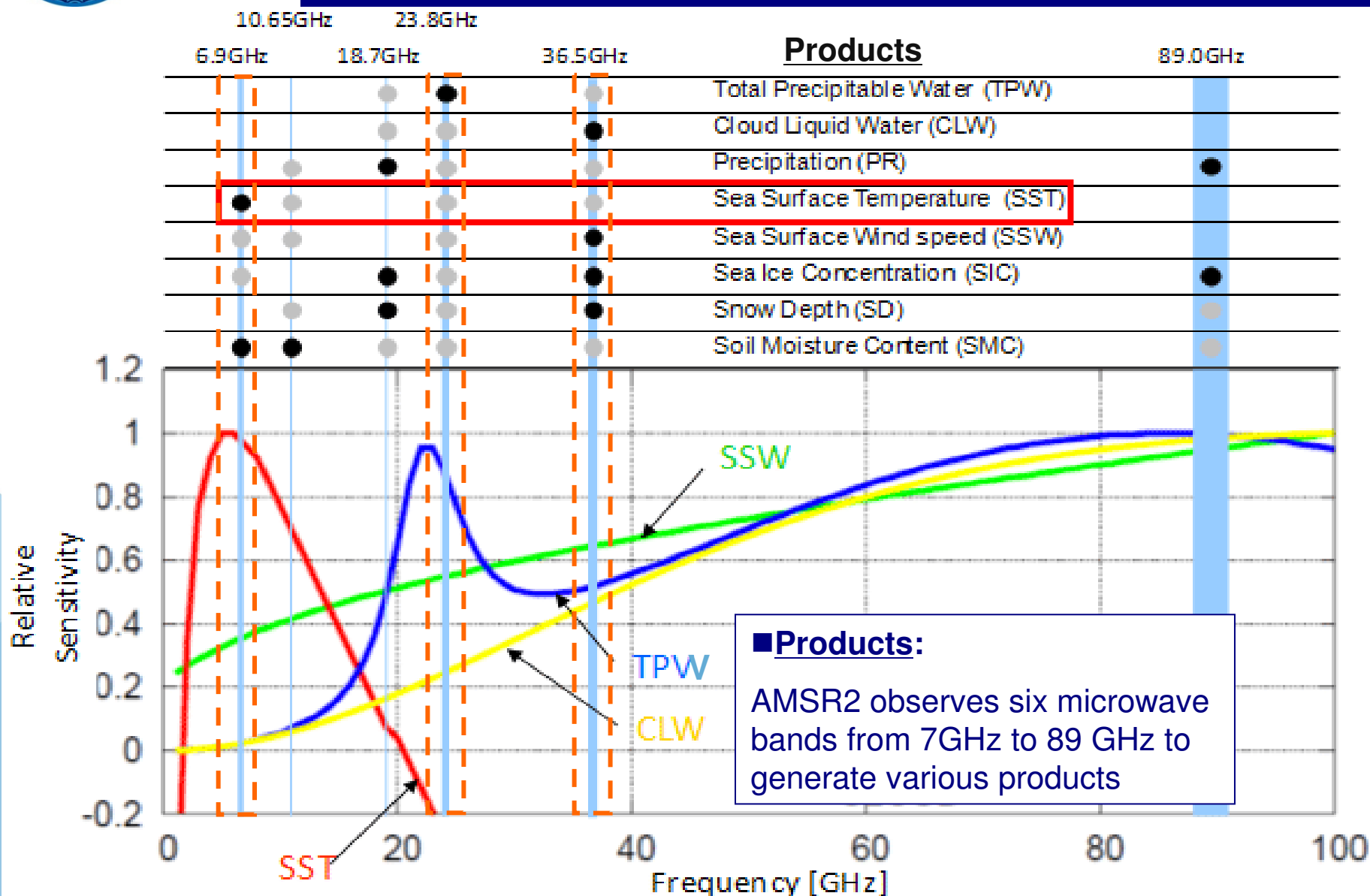
■ Mission instrument: AMSR2

- Advanced Microwave Scanning Radiometer 2 (AMSR2)
- Observe weak microwave from the ground, sea surface, atmosphere
- Follow-on instrument of AMSR-E loaded on Aqua operated by NASA
- Improvement from AMSR-E in accuracy and spatial resolution





Overview of “SHIZUKU”





Overview of “SHIZUKU”

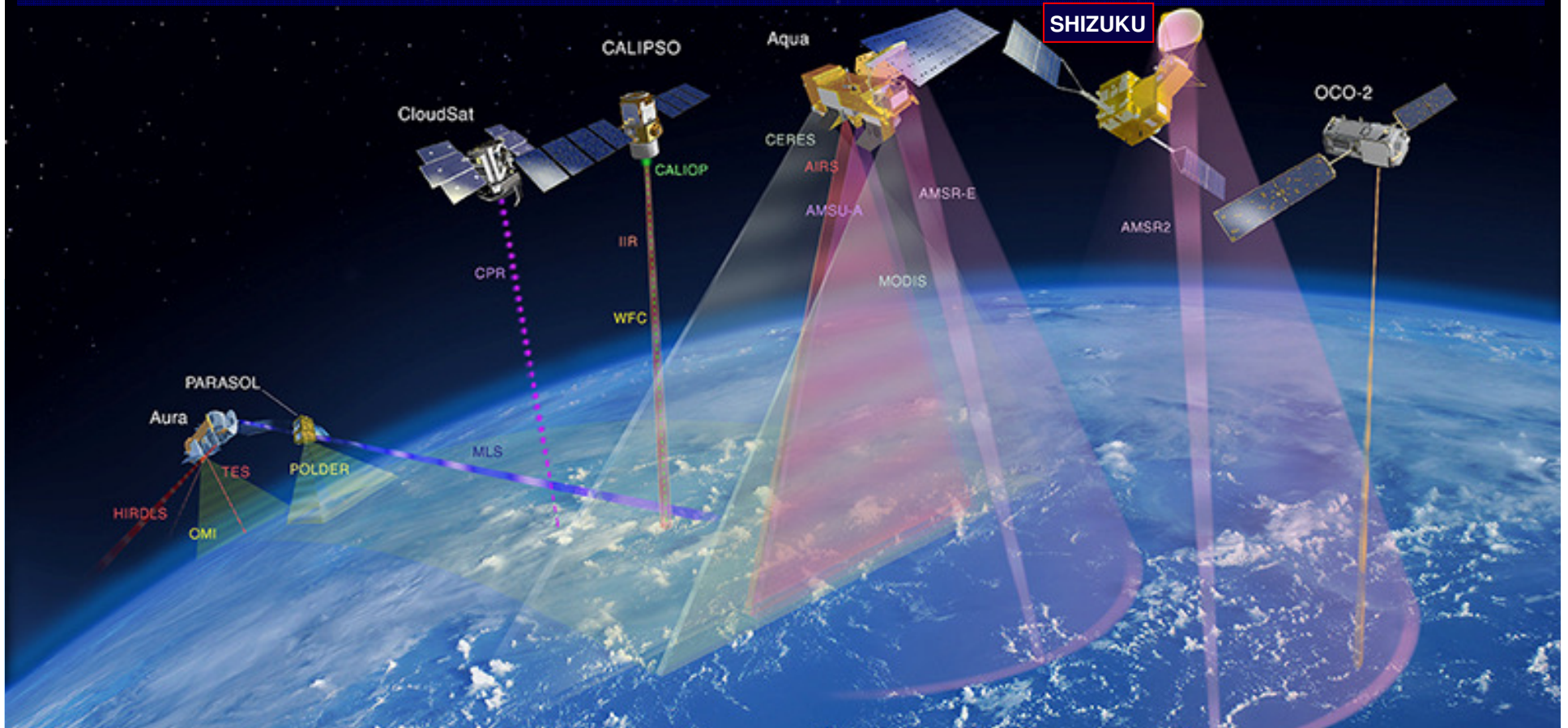




Overview of “SHIZUKU”

■ Special features of A-Train (Afternoon Constellation):

- Observe the same location on the Earth by multiple satellites around the same
 - time approximately within 10 minutes
- Consists of multiple satellites orbiting the Earth in close proximity at an altitude of about 700km, crossing the equator at around 1:30 p.m. local mean solar time

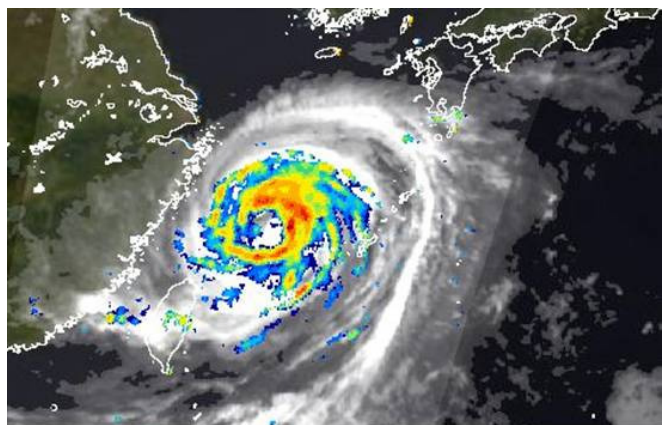




Current status of “SHIZUKU”

■ ~2012.8.10

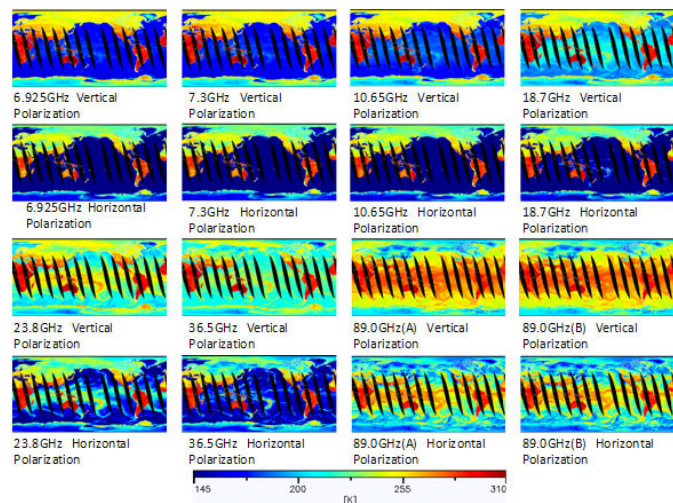
- Completed the initial functional verification of "SHIZUKU"
- Started regular observation




 weak heavy
 Typhoon No.11 "HAIKUI" observed by SHIZUKU

■ 2013.1.25~

- Initial calibration operation completed
- Started offering brightness temperature products
 - Brightness temperature indicates the radio wave strength of a specific frequency emitted from the atmosphere and the ground



Examples of Brightness Temperature Products



Contribution of “SHIZUKU”

■ Optimization of fishery:

- Sea surface temperature is closely connected with the distribution of fish (Fig.1).
- High accuracy and high frequency data provision
- Contribution to the decrease in the cost and fuel for fishery

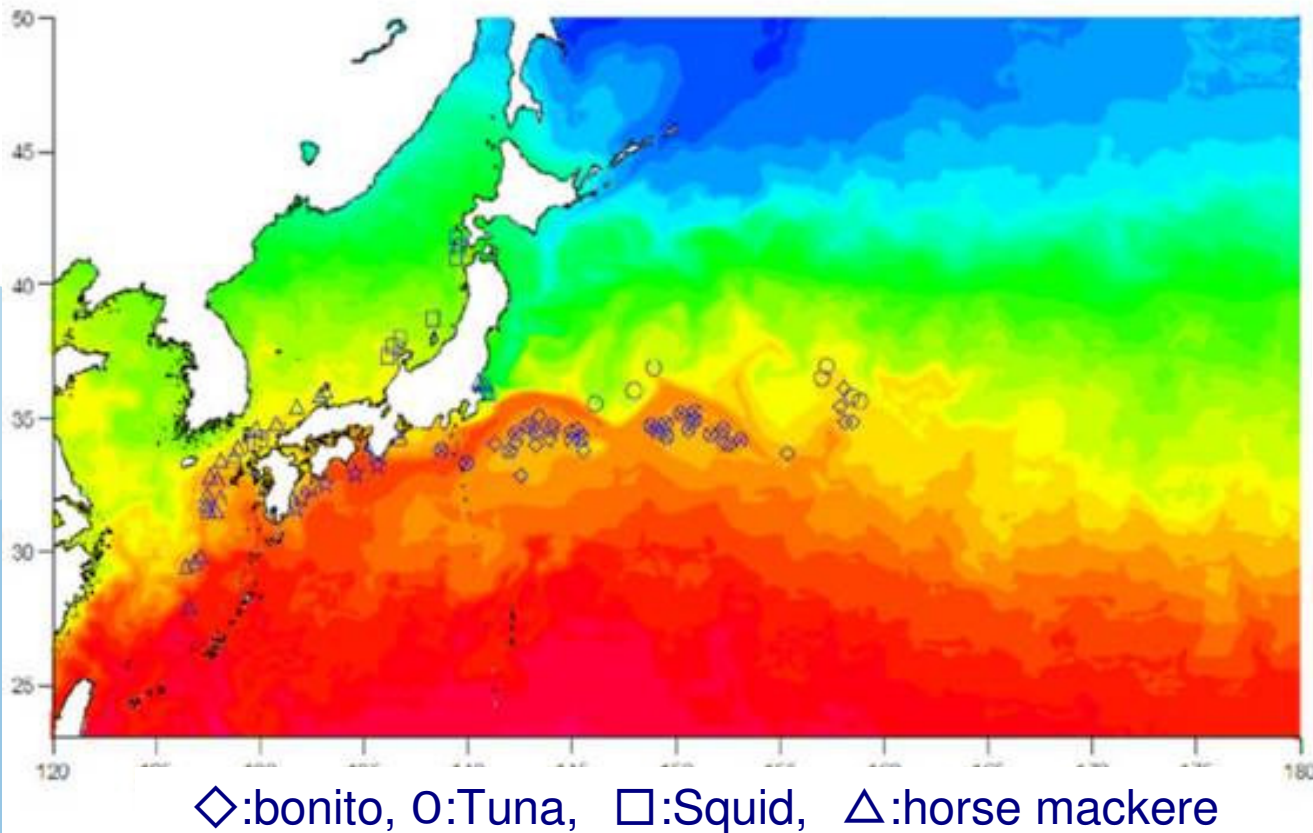


Fig.1 Relationship between SST from AMSR-E data and distribution of fish (provided by JAFIC*)
*Japan Fisheries Information Service Center



Contribution of “SHIZUKU”

■ Monitoring of drought:

- In the summer of 2010, a large scale drought affected Russia and caused severe damage on the crops
- Soil moisture data obtained by AMSR-E (Fig.2) shows the lower trend in 2010, even in April
- Contribution to early detection of drought

AQUA/AMSR-E SM ratios Jul., 2010 DES (Monthly)

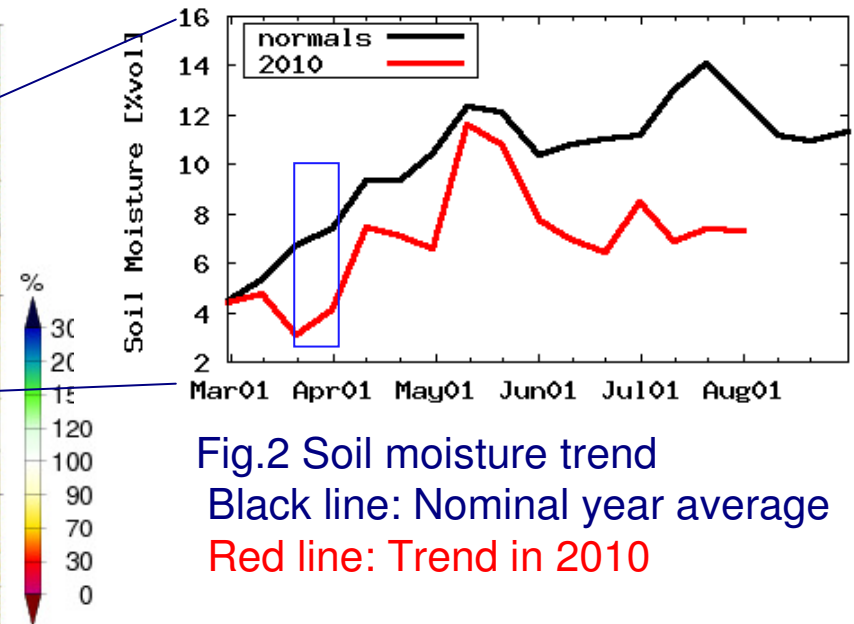
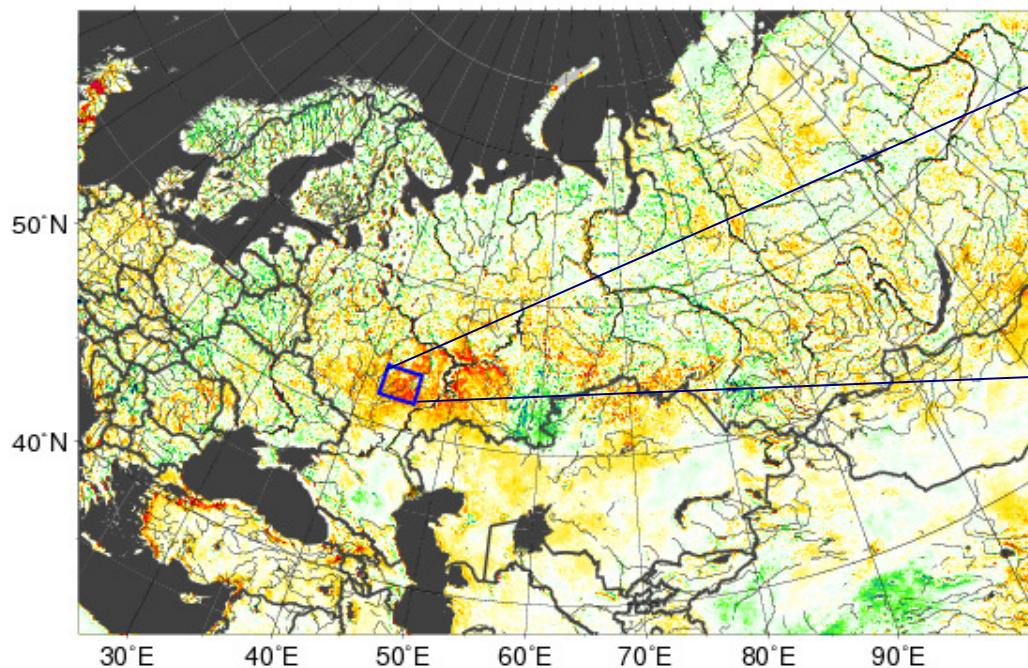


Fig.2 Soil moisture trend
Black line: Nominal year average
Red line: Trend in 2010



Contribution of “SHIZUKU”

■ Monitoring of Sea lane in the Arctic Ocean:

- Sea lane in the Arctic Ocean has been focused on in the marine transport field
 - Decrease the transportation cost and time between Asia and Europe (Fig.3)
- Contribution to find an optimal route and mitigate a risk of beset in ice (Fig.4)



Fig.3 Sea lane between Asia and Europe
Blue line: General route
Red line: Sea lane in the Arctic Ocean

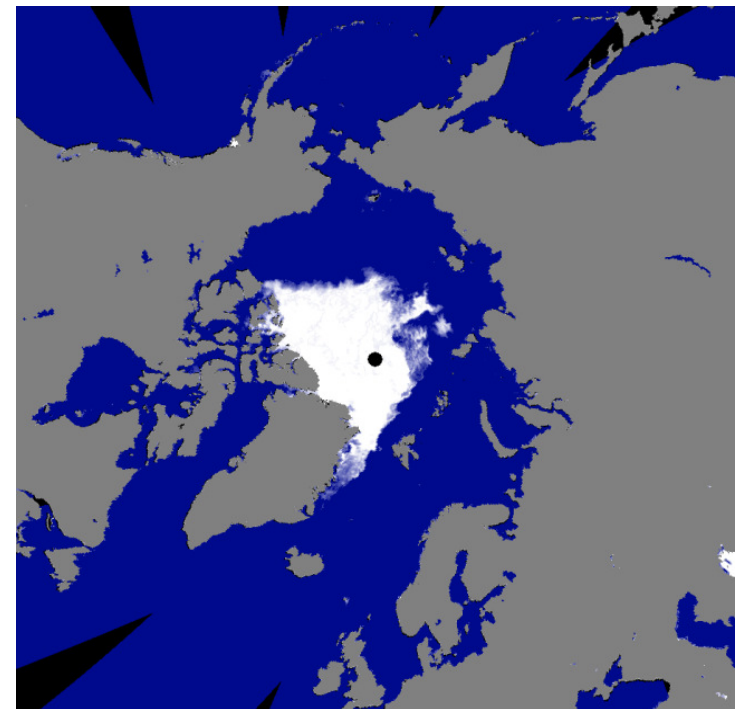


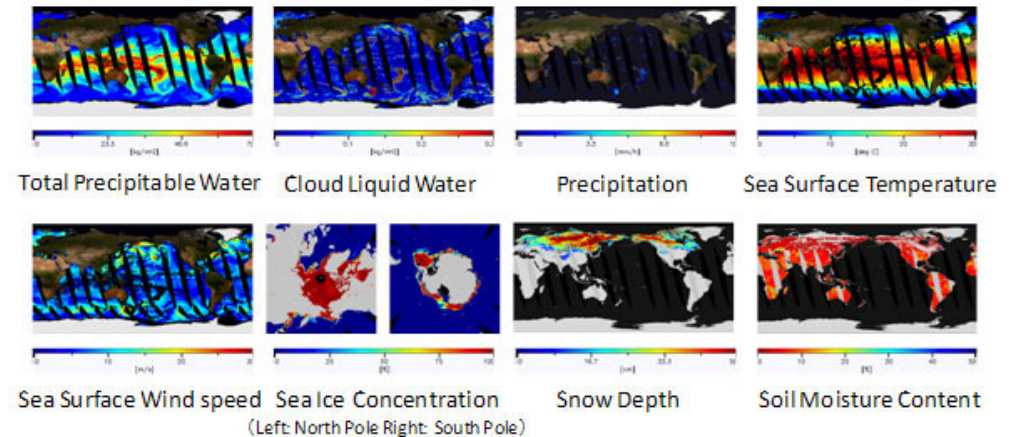
Fig.4 Sea Ice Concentration taken by SHIZUKU (Aug. 2012,)



Future plan and access to data

■ Future plan

- Geophysical products obtained by SHIZUKU currently under the evaluation process
- 2013.5~ Start public distribution of geophysical products



Examples of Geophysical Products

■ How to access SHIZUKU products

These products are provided through the “GCOM-W1 Data Providing Service” for free of charge.

<https://gcom-w1.jaxa.jp/auth.html>

GCOM-W1 Data Providing Service

Welcome,

This web service is online data service to provide products processed from Advanced Microwave Scanning Radiometer sensor series data. We provide products derived from data obtained by AMSR onboard ADEOS-II (Midori II) and AMSR-E onboard Aqua with free of charge. The new products, which are observed by AMSR2 onboard GCOM-W1 (SHIZUKU), will be available soon after the distributing preparation is completed.

User registration is required to use the products. If you have not registered yet, register your e-mail address as your user account at "User Registration". If you try services at this site before user registration, login with a e-mail address "guest" (password is not required).

Input e-mail address and password.

E-mail address: (User Account)

Password:

日本語 English

Save Login Status:

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Top page of GCOM-W1 Data Providing Service



Thank you for your attention.